

ABSTRACT OF THE DISCLOSURE

A system and method for analyzing samples, such as biological samples, to accurately and effectively determine the susceptibility of the samples to antimicrobial materials, so as to determine minimum inhibitory concentration (MIC) values for the respective samples and antimicrobial materials. At each of a plurality of time intervals, the system and method directs a plurality of different analyzing light wavelengths, such as red, green and blue wavelengths, onto each of a plurality of sample wells, and detects a respective resultant light wavelength emanating from the respective sample wells for each of the analyzing light wavelengths. The system and method uses resultant light wavelengths to generate at least two growth indicator characteristic curves representing, for example, the redox state and turbidity characteristics of the sample wells. The system then uses the redox state and turbidity characteristics of sample wells containing the same antimicrobial material to determine the MIC value for that material in relation to the sample contained in those wells.